Rec'd PST/PTO 15 JUN 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property **Organization** International Bureau



10/539334

(43) International Publication Date 22 July 2004 (22.07.2004)

(10) International Publication Number WO 2004/061724 A1

(51) International Patent Classification7:

G06F 17/50

(21) International Application Number:

PCT/US2002/040428

(22) International Filing Date:

17 December 2002 (17.12.2002)

(25) Filing Language:

English

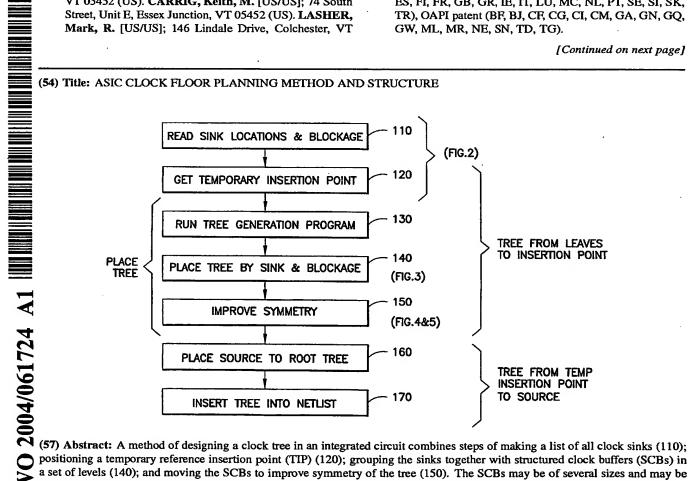
(26) Publication Language:

English

- (71) Applicant (for all designated States except US): INTER-NATIONAL BUSINESS MACHINES CORPORA-TION [US/US]; New Orchard Road, Armonk, NJ 10504 (US).
- (72) Inventors: and
- (75) Inventors/Applicants (for US only): ARTHANARI, Geetha [IN/US]; 38 Thasha Lane, I-4, Essex Junction, VT 05452 (US). CARRIG, Keith, M. [US/US]; 74 South Street, Unit E, Essex Junction, VT 05452 (US). LASHER, Mark, R. [US/US]; 146 Lindale Drive, Colchester, VT

05446 (US). MENARD, Daniel, R. [US/US]; 9 Acton Street, Arlington, MA 02476 (US).

- (74) Agent: NEFF, Daryl, K.; International Business Machines Corporation, Dept. 18G/Bldg. 300-482, 2070 Route 52, Hopewell Junction, NY 12533 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,



positioning a temporary reference insertion point (TIP) (120); grouping the sinks together with structured clock buffers (SCBs) in a set of levels (140); and moving the SCBs to improve symmetry of the tree (150). The SCBs may be of several sizes and may be positioned horizontally (42) or vertically (45) and moved within limits (46) to permit the program to calculate a complete tree.